"The caterpillar is downy and bimucronate behind." And the chrysalis: "The pupa is suspended by the tail; it is angulated, bimucronate on the front." Mucronate means in his glossary "terminating in a sharp point." That will do for the caterpillar, as it is tailed, but the chrysalis is wrongly described, its head case being square, without sharp points, or processes. Bois. and Lec. give a very fair representation of the chrysalis after Abbot, but the caterpillar is badly done, the head and its processes being quite out of drawing. Boisduval's description is drawn from the figure, not from nature, and of course is wholly incorrect, and he remarks that the two points which surmount the head spring up in the form of ears (s'éléveut en forme d' oreilles), as indeed they do, funnily enough, in the cut. The face is as that of a grasshopper, and the "ears" are as of a kangaroo, and the whole thing foreshadows a "gamesome and frolicsome" butterfly.

ON THE APHIDIDÆ OF FLORIDA, WITH DESCRIPTIONS OF NEW SPECIES.

BY WM. H. ASHMEAD, JACKSONVILLE, FLA.

(Paper No. 3.)

Section SIPHONOPHORINI.
Genus SIPHONOPHORA, Koch.

The species of this genus already described from North America are as follows:

1. *S. rudbeckiæ*, Fitch.
2. " *ambrosiæ*, Thomas.
3. " *rosæ*, Reaum. A variety of this species I find here on cultivated roses and on the wild Cherokee rose. It differs very considerably from Prof. Thomas' description, and may be known as *S. floridæ*.

I submit following description:

S. rosæ, var. *floridæ*, n. s.

Wingless female.—Length .07 inch. Elongate ovate; pale shining green; eyes red; beak very pale and short, not reaching to middle coxæ,

widening before tip, tip black; antennæ 7-jointed, reaching to base of honey-tubes, annulated with brownish-red at joints; honey-tubes long, reaching beyond tip of abdomen, pale greenish, very slightly infuscated at tip; style short, conical, pale green; legs uniform pale green, feet very slightly infuscated.

Winged individual.—Length .06 inch. Elongate ovate and shining green. Vertex of head reddish; eyes brown; antennæ reaching beyond tip of abdomen, dark brownish black, excepting basal joints, which are pale; thorax shaded with brown; abdomen pale; legs pale greenish yellow, knees black; wings hyaline, veins greenish yellow, discoidal vein black.

4. *S. avenæ*, Fab.

5. " *viticola*, Thomas. First detected here early in March on wild grape vines growing in our swamps; later it becomes quite common on cultivated vines.

6. *S. setariæ*, Thos.

7. " *euphorbiæ*, Thos.

8. " *euphorbicola*, Thos.

9. " *asclepiadis*, Fitch. Very common here in early spring on *Asclepias cornuti.*

10. *S. erigeronensis*, Thos.

11. " *cereopsis*, Thos.

12. " *lactucæ*, Linn. Occasionally found here on lettuce.

13. " *polygoni*, Walker.

14. " *salicicola*, Thos.

15. " *verbenæ*, Thos.

16. " *rubi*, Kalt. Rarely found in early spring on under surface of leaves of *R. villosus.*

17. *S. pisi*, Kalt.

18. " *gerardiæ*, Thos.

19. " *heucheræ*, Thos.

20. " *cucurbitæ*, Thos.

21. " *tanaceti*, Linn.

22. " *fragariæ*, Koch. Var. *immaculata*, Riley.

23. " *menthæ*, Buckton.

24. " *absinthii*, Linn.

25. " *achyrantes*, Monell.

26. " *calendulla*, Monell.

27. *S. tulipæ*, Monell.
28. " *crataegi*, Monell.
29. " *sonchi*, Linn. Syn. *sonchella*, Monell.
30. " *calendulæ*, Monell.
31. " *tiliæ*, Monell.
32. " *liriodendri*, Monell.
33. " *prunicola*, Ashmead, Pacific Rural Press, 1881.
33. " *citrifolii*, Ashmead, Orange Insects. p. 65, 1880.

DIMORPHISM AMONG THE SIPHONOPHORA.

For many years dimorphism, viviparousness and parthenogenesis among insects have attracted universal attention. Not only from the fact of the rarity of their occurrence, when we take into consideration the countless insect hosts of varied forms, sizes and colors that constitute what may be termed the insect world; but to the biologist, the naturalist and the philosopher, they are of the most profound and absorbing interest as bearing upon some of the great unsolved questions of the day. A careful study of the economy of any one of the billions of animated forms that exist around us, will certainly unfold some hidden truth, give a glimpse, or reveal some knowledge of that mysterious, omnipotent and almost unknowable force pervading the universe. And will not facts derived from these studies enable mind—the supreme, the attainable—to grasp truths unattainable without them? Since Darwin's wonderful revelations in regard to earthworms, I have had the profoundest respect for them; and as I pass on my way to my business in the early morning and turn up with my foot their dwellings, disclosing their tortuous night work, I feel like bowing to them and saying: Oh, wonderful earthworm! You, too, are worthy of respect and admiration; for hast thou not during countless cycles of ages been helping to build up and beautify the universe and render it a fit habitation for man!

The subject under consideration has had the closest attention from some of the more thoughtful students of Entomology in this country, as well as in Europe. America may well feel proud of her investigators in this particular field of research, among whom may be mentioned Benj. D. Walsh, discoverer of dimorphism among the Cynipidæ; H. F. Bassett, who so ably continues the studies and adds to the discoveries respecting the habits of this family, since Walsh's death. We younger Entomologists may well imitate the example of W. H. Edwards, whose very thorough

and able investigations and experiments with the diurnal Lepidoptera have thrown such a flood of light on dimorphism and what really constitutes "a species;" and last, but not least, Prof. C. V. Riley's similar discoveries among the Phylloxeræ and Pemphiginæ. All have done much towards elucidating the vexed question.

Among the Aphididæ proper, although it has often been suspected in America, no recorded instance of dimorphism among them, that I am aware, exists. The discovery of its occurrence in the Orange Aphis, *Siphonophora citrifolii*, described by me in my pamphlet on "Orange Insects," in the fall of 1880, therefore is of great interest, and no doubt will prove such to many readers of the CAN. ENTOM.

From observations made this year I find that from an egg laid by a fall oviparous female hatch the brown-black and black winged male and winged viviparous female, which I describe as follows:

Young.—Length .02 inch. Dark greenish brown, with dark eyes and glassy white antennæ and legs.

♂.—Length .04 inch. Color brown and brown-black; antennæ brown, legs pale or yellowish, posterior femora slightly shaded above with brown or black; feet reddish; nectaries shorter than in female; wings hyaline, stigmal spot pale.

These are rare among the first broods, and afterwards almost or entirely disappear.

♀ Apterous.—Length .05 to .06 inch. Broadly ovate. Dark brownish black. Head between antennæ reddish; antennæ 7-jointed, pale yellowish, apical ends of joints 3, 4 and 5 brown, 6th shortest, 7th long, setaceous; legs pale yellow, latter two-thirds of femora brownish or blackish, tips of tibiæ and claws brown; nectaries slightly thickest at base, black and cylindrical; cauda distinct.

♀. Winged viviparous. Length .06 inch. Color black and shining; eyes red-brown, tubercles of antennæ black, vertex of head reddish; rostrum reaching back of middle coxæ; antennæ not quite reaching to tip of abdomen; abdomen variable, brown-black, brown or olive-green; nectaries long, cylindrical and black; cauda long and recurved, dark; wings hyaline, stigma rather broad, brown, obliquely sharpening to a point at outer edge towards apex; stigmal vein strongly curved, three oblique veins, the third forked; hind wings with two oblique veins, in some specimens but one.

I have watched these viviparous females breed on my orange trees, and the rapidity with which this is done is simply astonishing. In a few days broods upon broods, or young colonies, seem to exist on all the tender new leaves and shoots, and still the parthenogenetic young keep coming. Verily, if it were not for the chalcid flies, ichneumons and other parasites, they would be the death of the trees. By the middle of March a change takes place in the broods. The young differ from their parents in shape, color and size! So different are they as to discredit belief, and had I not watched them breeding day by day on my orange trees, I should have felt justified in describing them as a distinct species. They are undoubtedly a dimorphic form, and I give below a description:

Dimorphic, viviparous, apterous female.—Length .08 to .09 inch. Elongate; color a uniform pale pea-green, with more or less of a longitudinal shading of a darker green on dorsum, with the surface more or less corrugated; eyes bright red, with a prominent facet or ocellus springing out from hinder edge of same, giving it a toothed like appearance; antennæ 7-jointed, pale glassy green, in mature specimens the tip from 5th joint is reddish; legs of the same uniform pale green, with only feet red; abdomen at tip somewhat pointed; nectaries very long and thin, slightly curved, slightly swollen in middle, and pale green; cauda small, conical. Beak does not quite reach to tip of middle coxæ.

The winged form agrees in every respect with above description, and can only be distinguished by having wings, the veins of which are very pale. These are rare, the majority being wingless.

The mature viviparous female continues breeding and can often be found surrounded by from 20 to 30 pale green young; occasionally a brown one will be found among them. These continue breeding for several generations, ultimately giving place to the original type, and by the last of April none can be found. Why this change of form occurs is yet a mystery, and needs further investigation. Towards the end, all seem to be parasitized by a *Trioxys*, *T. testaceipes* Cresson, which thoroughly eradicates them.

34. *S. solanifolii*, n. sp.

Wingless female.—Length .12 inch. Elongate ovate and of a pale yellowish green color; beak short, not reaching middle coxæ, pale, tip black; antennæ 7-jointed, slightly reaching beyond abdomen, situated on large tubercles, pale greenish, joints infuscated, 6th joint shortest, dark,

7th longest, brown ; eyes red ; honey tubes very long, reaching considerably beyond abdomen, slightly thickened at base, infuscated at tip ; style short, conical, greenish ; coxæ shining and yellowish, feet black.

♂. Length .05 inch. Black. Beak reaching to middle coxæ, apical half black ; antennæ black, hardly reaching to middle of abdomen ; honey tubes rather short, black ; all coxae black, anterior and middle legs pale greenish, tips of tibiae and feet black, posterior pair, excepting apical half of femora, which is greenish, brown.

Only two males were secured out of hundreds of apterous individuals, and these are remarkable for being so much smaller than the females.

Found feeding on the Pepper Vine, *Solanum jasminoides*.

THE HOP-VINE BORER.

BY CHARLES R. DODGE, WASHINGTON, D. C.

The casual reader, calling to mind only the half dozen hop-vines usually seen about the kitchen garden, or trailing upon some farm outbuilding, can hardly realize the possible losses to hop growers by insects. According to the last census (for 1879) New York State alone had over 39,000 acres in hop yards, producing nearly 22 millions of pounds of hops, which, at an average of 28c. per lb., would aggregate a value of over six million dollars. Bearing these figures in mind, with an annual loss of 10 per cent. from only one insect—the hop borer—(and 25 to 50 per cent. of injury has been reported) a loss of $600,000 would result in this single State.

With such a destructive agent in the hop field, is it not a little singular that there is little or nothing "in the books" on the subject, and that the pest is in all probability an unknown and undescribed species? I am not able to give its name—Prof. Comstock writes me he is working it up—but as I have accumulated a mass of interesting data on the subject in my census work, I deem it proper to make known now the experience of intelligent growers in different sections of the country, for the benefit of those who have not yet learned how to fight the pest, leaving the scientific name and details of habits and natural history to be supplied hereafter.

The only mention that I can find of an insect boring into the crown of the hop plant, in the manner set forth by my numerous correspondents,